

CLAIMS

What is claimed is:

5 1. A method for converting the bit rate of a compressed bitstream to use an available bandwidth of a channel, the method comprising:

re-quantizing a first portion of the bitstream containing video data using a first re-quantization scheme; and

10 re-quantizing a second portion of the bitstream containing video data using a second re-quantization scheme.

2. The method of claim 1 wherein the second re-quantization scheme is computationally more demanding than the first re-quantization scheme.

3. The method of claim 2 wherein the first re-quantization scheme includes basic re-quantization.

4. The method of claim 2 wherein the second re-quantization scheme includes motion compensated re-quantization.

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5. The method of claim 1 further including determining the available bandwidth of the channel.

25 6. The method of claim 1 wherein the second re-quantization scheme includes full decoding and re-encoding of the second portion.

7. The method of claim 6 further including changing the resolution of the second portion.

8. The method of claim 1 wherein the first and second portion each include a frame of
5 the video data.

9. The method of claim 8 wherein the compressed bitstream is an MPEG compressed bitstream and the first portion includes a B frame.

10 10. The method of claim 8 wherein the compressed bitstream is an MPEG compressed bitstream and the second portion includes a P frame.

11. The method of claim 10 wherein the first portion includes a P frame and the P frame
is the last P frame in a group of pictures.

12. The method of claim 1 wherein the first portion comprises color video data.

13. The method of claim 1 wherein the second portion comprises brightness video data.

20 14. The method of claim 1 wherein the first and second re-quantization schemes are performed in real time.

15. The method of claim 1 further including monitoring the processing load of a processor in a network device.

16. A method for converting the bit rate of a compressed bitstream to use an available bandwidth of a channel, the method comprising: selectively re-quantizing a portion of the bitstream according to one of two re-quantization schemes, the first re-quantization scheme comprising variable length decoding the portion, inverse quantizing the portion, re-
5 quantizing the portion with a different quantization step size and variable length encoding the portion, the second re-quantization scheme comprising motion compensated re-quantization of the portion.

17. The method of claim 16 wherein the portion is a frame of the compressed bitstream.

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18. The method of claim 17 wherein the frame is re-quantized using the first re-quantization scheme when the frame is a B frame and the frame is re-quantized using the second re-quantization scheme when the frame is a P frame.

19. The method of claim 17 wherein the frame is re-quantized using the first re-quantization scheme when the frame includes chroma information and the frame is re-quantized using the second re-quantization scheme when includes luma information.

20. The method of claim 16 further including performing motion estimation to produce motion vectors for the motion compensated re-quantization.

21. A network device for providing compressed video data onto a network, the network device comprising: a re-quantization apparatus that receives a compressed video bitstream having a first bit rate and outputs the compressed video bitstream having a second bit rate, the re-quantization apparatus including a first portion configured to receive a first portion of the compressed video bitstream and output the first portion after re-quantization by a first re-quantization scheme, the re-quantization apparatus including a second portion configured to receive a second portion of the compressed video bitstream and output the second portion after re-quantization by a second re-quantization scheme; and a transmitter configured to transmit the compressed video bitstream having the second bit rate onto the network.

22. The network device of claim 21 further including a network interface configured to receive the compressed video bitstream having the first bit rate from the network.

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23. The network device of claim 21 further including a rate controller coupled to the re-quantization apparatus.

24. The network device of claim 21 wherein the first portion of the re-quantization apparatus is included in the second portion of the re-quantization apparatus.

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25. The network device of claim 21 further including a processor whose processing load at least partially determines which of the first portion and the second portion of the re-quantization apparatus is used.

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26. A system for converting the bit rate of a compressed bitstream to use an available bandwidth of a channel, the system comprising:

means for re-quantizing a first portion of the bitstream containing video data using a first re-quantization scheme; and

means for re-quantizing a second portion of the bitstream containing video data using a second re-quantization scheme.

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27. The system of claim 26 wherein the means for re-quantizing the first portion is included in the means for re-quantizing the second portion.

28. The system of claim 26 wherein the means for re-quantizing the first portion includes means for performing basic re-quantization.

29. The system of claim 26 wherein the means for re-quantizing the second portion includes means for performing motion compensated re-quantization.

30. A computer readable medium including instructions for converting the bit rate of a compressed bitstream to use an available bandwidth of a channel, the instructions comprising:

5 instructions for re-quantizing a first portion of the bitstream containing video data using a first re-quantization scheme; and

10 instructions for re-quantizing a second portion of the bitstream containing video data using a second re-quantization scheme.